

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
19 May 2005 (19.05.2005)

PCT

(10) International Publication Number
WO 2005/044736 A1

(51) International Patent Classification⁷: **C02F 1/42**
(21) International Application Number:
PCT/KR2004/002881

(22) International Filing Date:
8 November 2004 (08.11.2004)

(25) Filing Language: Korean

(26) Publication Language: English

(30) Priority Data:
10-2003-0078795 7 November 2003 (07.11.2003) KR
10-2004-0015196 5 March 2004 (05.03.2004) KR
10-2004-0015193 5 March 2004 (05.03.2004) KR

(71) Applicant (for all designated States except US): **SEUNG GWANG CO., LTD.** [KR/KR]; 160B-10L Namdong Industrial Complex, 731-7 Gojan-dong, Namdong-gu, Incheon 405-822 (KR).

(72) Inventor; and
(75) Inventor/Applicant (for US only): **JEONG, Seung-hoon** [KR/KR]; 103-804 Hyundai APT, 545-1 Cheonghak-dong, Yeonsu-gu, Incheon 406-120 (KR).

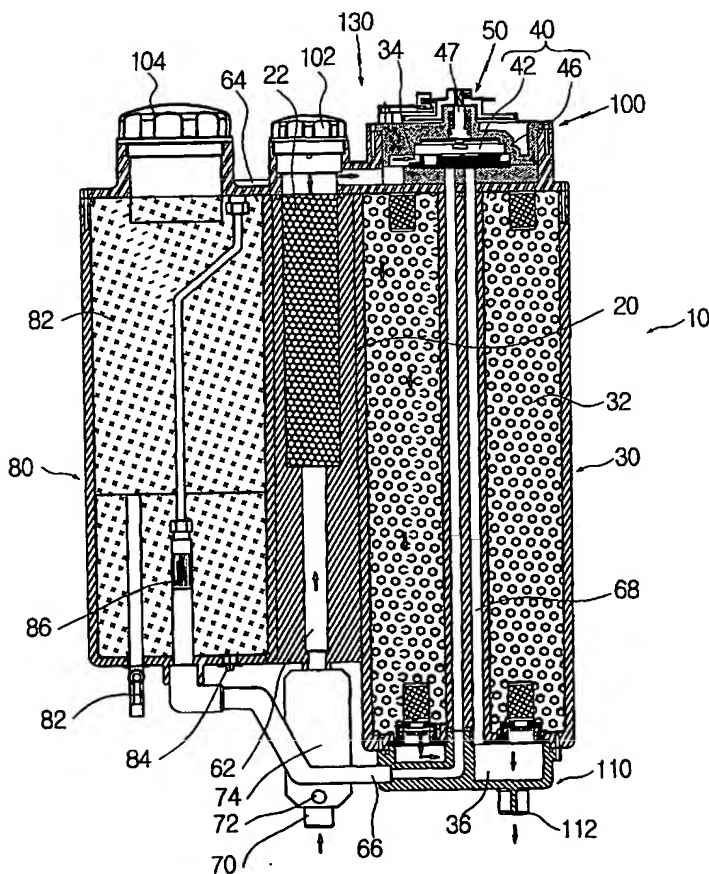
(74) Agent: **PARK, Hee-seop**; #503 Seongji Heights 3, 642-6 Yeoksam-dong, Kangnam-gu, Seoul 135-717 (KR).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: **AUTO-REGENERABLE HOT AND COLD WATER SOFTENER**



(57) Abstract: Disclosed is an automatic regenerable cold/hot water softener comprising a water softening tank having ion exchange resin and a regenerating tank filled with regenerating substance of the ion exchange resin. The water softener controls water softening mode for receiving raw water and discharging soft water using one switching valve, a direct water mode for discharging raw water itself, a regeneration mode for regenerating ion exchange resin, and an intermittence mode for intermitting the inflow and outflow of the raw water and the soft water. The precise regeneration time of the ion exchange resin is judged according to the used amount of the soft water by a temperature sensor and a flow meter for sensing temperature and flux of supply raw water. The regeneration is automatically prosecuted by a control part having a microprocessor. Enough cold/hot soft water can be supplied according to season or need of a user. The cold/hot water softener serves a user's convenience in that sudden change of temperature is prevented.

WO 2005/044736 A1



GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.